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ABSTRACT

Knowing that many vocational facilities differing in outward appearance have equally successful results, the Indiana State Advisory Council on Vocational Education conducted a study to assess the essential elements of a vocational facility and to determine if a cost formula could be developed that would be useful for vocational administrators and other leaders in making decisions concerning vocational education facilities. Project activities were conducted in the following five phases: a background information search; a modified Delphi study; development of facility assessment instruments and procedures; development of a cost estimation formula and the nature and use of the computer programs; and onsite assessments using the instrument developed for the project. Based on the findings and observations of the project team, some of the conclusions drawn were (1) that there is not now available and/or conveniently accessible information for facility planners to use for preplanning, designing, estimating, and projecting vocational education facility needs; (2) that reasonable standards/outlines are needed along with guidelines; (3) that the tools developed in this project could prove useful in coordinating and communicating vocational education facilities status and future needs to all state agencies involved in vocational program development and implementation; and (4) that the assessment packet is useful in planning as well as assessing facilities. (This document presents a brief overview of the project; a more detailed report is available in ERIC--see note.) (BM)

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INSTRUMENTS AND PROCEDURES FOR EVALUATING AND ASSESSING THE STATUS OF VOCATIONAL EDUCATION FACILITIES IN INDIANA

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Final Report

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SUMMARY

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JULY, 1978

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PREFACE

The Indiana State Advisory Council on Vocational Education recognized several years ago that vocational education facilities have a great effect on programs conducted at a particular institution. The Council realized as well that funds for the construction of new vocational facilities and for remodeling existing structures were and would be limited for the foreseeable future. Knowing that many vocational facilities differing in outward appearance had equally successful results, the Indiana Council undertook a research study to assess the essential elements of a vocational facility and to determine if a cost factor or formula could be developed that would be useful for vocational administrators and other leaders in making decisions concerning vocational education facilities.

The Indiana Advisory Council on Vocational Education's grant for this study was awarded to Dr. Norbert Nelson of Purdue University and Thomas Morlan of Morlan and Associates, with Dr. R.E. Munsterman as the principal investigator.

The Council believes "Vocational Education Facility Assessment Packet" with the accompanying instructional Manual is a valuable tool developed by this research. It is comprehensive, yet simple enough, that with a short training session educators can use the instrument with great validity.

The combination of architectural, construction, and education components in one packet using laymens language was a difficult task but should have great value for any institution considering developing, changing, or remodeling its vocational education facility.

This summary was developed so that you could get a quick understanding of the overall research. Final reports, Volume I and II are available on loan from:

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INTRODUCTION

With the growth of vocational-technical education in Indiana, there exists a need to determine what is an adequate vocational education facility for delivering these vocational-technical education programs. Due to rapid changing and expanding technology, there exists a need for an improved method of assessing vocational education facilities to meet the demands of these technological changes. One method of providing assistance to vocational leaders and educational administrators is an information system that will provide the necessary and valuable information to the present status of vocational facilities; a measure for vocational education buildings/sites, with respect to acceptability, assessibility, suitability, and development; and the basis for determining building construction components such as spatial, sonic, thermal, hygienic, safety, traffic flow, equipment, and structural.

Statement of Problem

The specific problem that this research addressed was (a) to develop and test an assessment model with procedures and tools for determining the present status of vocational education facilities in Indiana; (b) to perform actual site inspections using the developed instruments and techniques on a sample of vocational facilities in Indiana; (c) to develop a cost analysis model for determining estimated costs of remodeling, renovation, and/or additional new construction; and (d) to develop a computer program to analyze the data collected from the building and site inspections.

Significance of Study

Lack of data and tangible evidence...make it difficult for laymen or professionals to fully evaluate the national program of vocational education.[1]

This statement was written in 1963 and it is equally true today. Many projects for development of Management Information Systems (MIS) have been funded by both state and federal agencies in the last five years to develop MIS for providing the necessary data to be used for vocational decision makers. This research project is an attempt by the Indiana State Advisory Council on Vocational Education to provide an organized vocational education facility and cost assessment instrument and to develop the procedures which will provide the necessary data for wise decision making on vocational facilities and fixed equipment. More specifically, the outcome of this recent project can be used to:

1. Assist in explaining vocational education differences in results by type of facility (e.g., area vocational center, comprehensive high school, etc.)
2. Assist in developing planning strategies related to facilities and fixed equipment.
3. Provide a systematic procedure for periodic studies of facilities and fixed equipment in the future.
4. Determine the extend to which facilites may meet criteria of state agencies.

[1]Lee, A.M., "Project Baseline: Histographic Foundations for Vocational Education Statistics," **Educational Researcher** July-August 1977, **6** (7), 3.

Project Activities

The project had five phases. Phase One was the Background Information Search. Phase Two was conducting a modified Delphi Study. Phase Three was the development of facility assessment instruments and procedures. Phase Four was the development of a cost estimation formula and the nature and use of the computer programs. Phase Five was on-site assessments using the instrument developed for the project.

Background Information Search

In order to develop the Modified Delphi Instrument and the **Vocational Education Facility Assessment Packet** for assessing vocational education facilities, it was necessary to conduct national and state surveys of departments of public instruction, state boards of vocational-technical education and professional associations concerned with facilities planning for vocational education, and to review any guidelines for facilities that were developed by the public agencies in Indiana. The purposes of this phase of the project were as follows:

1. To determine what facility guidelines have been established in other states
2. To establish an information bank on vocational facility planning materials
3. To determine the state-of-the-art on vocational facilities assessment procedures
4. To determine the procedures for cost estimation or remodeling, renovation, and/or new construction of vocational facilities.
5. To provide sample items for the Delphi questionnaire
6. To provide items for the **Vocational Education Facility Assessment Packet** survey instruments.

Modified Delphi Study

The modified Delphi was undertaken to determine features of facilities for vocational education programs where a panel of specialists reached consensus as to the nature of features that are needed and their importance to a program. These are not standards but rather guides to use in assessing the status of the adequacy of a facility to accommodate a particular vocational program. In this study, ideas from the Delphi were used in the development of the **Vocational Education Facility Assessment Packet** and in the Computer Program as a feature consideration where no definitive standards and guidelines for features were found in data available from official sources (e.g., Department of Public Instruction, State Board of Vocational and Technical Education).

Another use of the Delphi results could be as an information source for use in a facilities planning program. It does give features on which there were consensus and judgements of importance from panelists who were selected as having specializations pertinent to vocational programs and/or facilities.

Development of Assessment Instruments and Procedures

Instruments for assessment purposes should be applicable and useable in generating data that meet particular needs. Providing a desired level of specificity and an adequate degree of preciseness also are essential considerations in instrument development. Often attempts are made to make an instrument simple so that it is easy to complete, only to find the information collected is too general for intended use. Or attempts may be made to design instruments that can be completed without needing special knowledge and skills. These instruments often give inexact information which will vary from person to person, depending on who gathers the data. Four considerations guided the development of assessment instruments for vocational education:

1. The instruments are to be applicable for assessment of vocational facilities (building and sites)
2. The instruments should generate data that are useable for purposes of evaluating facility potential for accomodating vocational programs
3. The instruments ought to collect data that are sufficiently specific to be meaningfully interpreted
4. The instruments should generate information that is sufficiently precise both quantitatively and qualitatively to provide a definitive description of properties of facilities.

This facility assessment packet was developed to be used as an aid by professionals in vocational education facility assessing, evaluating, and planning processes. The **"Vocational Education Facility Assessment Packet"** that resulted has an accompanying instructional manual with outlined procedures to follow. The complete assessment packet is divided into four major parts. The first part (cover) is for recording identification information and general data. The second part (inspection) is an inspection form to record specific information about the facility. The third part (site) of the packet is the site assessment, which includes a recapitulation that summarized this part of the assessment. The fourth part (building) is the building assessment, which also includes a building recapitulation summary.

Cover

Three categories of information are collected on the cover page of the packet. Identification data and general building and site information are to be recorded on this page.

Inspection

The inspection forms include ten categories of data. Identification data (that locates the particular space being recorded), spatial, construction, electrical, electronic, mechanical, health and safety, barrier free, and spaces for recording special equipment and/or other features are provided. The inspection forms provide for the highly specific and/or measured information recording.

Site

Four categories of site features are included for assessing sites--acceptability, accessibility, suitability, and development. The recapitulation summary gives two general ratings, one for site features and the second for site improvements.

Building

Vocational education school buildings are assessed on nine categories--spatial, sonic, thermal, visual, hygienic, safety, traffic flow, equipment and structural components of a building. In the recapitulation summary, general overall ratings can be recorded for the adequacy, quality, and efficiency of construction and education features of the building.

Development of Cost Estimation Models and Computer Programs

The Cost Estimation Model and Computer Programs were developed to deal with the following specific objectives of the project:

1. To develop a formula for measuring the estimated unit cost for possible future replacements, modifications, or improvements to meet changing program demands
2. To assess the status of facilities and fixed equipment for vocational education in a sample of Indiana area vocational centers and comprehensive secondary schools
3. To determine the relationship between existing facilities and standards for approved vocational facilities
4. To determine the extent to which existing vocational education facilities meet approved guidelines for accommodating physically handicapped students.

Three important considerations that were taken into account in guiding the development of the Model and Computer Programs were:

1. The Cost Estimation Model must be related to the **Vocational Education Facility Assessment Packet**
2. The developed computer programs must be compatible with the State of Indiana's computer system
3. The Cost Estimation Model must be a valid and reliable procedure for cost estimation of renovation projects.

On-Site Assessment of Facilities

After the development of a preliminary assessing instrument, of acceptable criteria for use in assessing vocational facilities, and of the Cost Estimation Model, it was necessary to test the instrument on actual vocational education facilities. As a result of field testing the instrument, the project staff made refinements and finalized the instrument into a usable tool.

Throughout the progress of the project, data were collected from numerous facilities. Many of the facilities on the list were inspected solely for the purpose of developing and testing the assessment packet. Several of the facilities inspected were revisited two or

three times in order to obtain complete data compatible with the final instruments. Many facilities were revisited in order to compensate for the "learning curve" experience. The inspectors' performances became more accurate and consistent as they became familiar with the educational programs and vocational education facilities. Therefore, the reinspections were valuable in revalidating previous data collected.

Findings, Conclusions and Recommendations

The thrust of the project was to develop instruments and procedures for evaluating and assessing the status of facilities for accomodating vocational education programs in Indiana. The **Vocational Education Facility Assessment Packet**, Cost Estimation Model, Computer Program, and facility reports represent the products of the study. As would be expected in carrying through a project so extensive as this one, certain things were discovered and learned from which rather conclusive positions could be drawn. These findings, conclusions, and recommendations are for the Indiana State Advisory Council on Vocational Education to consider.

Findings

Many things were discovered in carrying out this project. Those findings perceived as pertinent are:

1. The literature search revealed that limited information was available on reasonably sophisticated approaches being used to project vocational education facility needs for the future.
2. In searching for definitive ideas to use in educational facility planning, it was found that there were many general guidelines and relatively few specific standards.
3. In reviewing literature dealing with the design of facilities to accomodate handicapped people, specific standards were suggested.
4. Existing instruments for school facility assessments were found not to be applicable in some instances, and not adaptable to vocational requirements
5. A search of the contemporary literature relating to school facilities revealed that much attention was being given to energy problems
6. No procedures were found to exist for doing cost estimation for facility renovations, although procedures to apply to estimate costs of new construction were available
7. Regulations and standards available for school buildings in Indiana applied primarily to general construction requirements, health, and safety, with the educational requirements being mainly for elementary and secondary school room sizes
8. The **Vocational Education Facility Assessment Packet** does have face validity
9. The modified Delphi technique used in this project did yield consensus on acceptable criteria to use in projecting facility needs for vocational education in Indiana
10. Training and experience in using the **Vocational Education Facility Assessment Packet** minimizes errors and improves efficiency
11. The assessment packet does measure and judge criteria that were established by Indiana State agencies and suggested by the modified Delphi study for determining adequacy of secondary school vocational facilities

12. The assessment packet is useful for assessing facilities other than those classified as secondary school vocational facilities
13. The assessment packet can be used by different training evaluators and produce similar results
14. The Cost Estimation Model is a desirable tool to use in vocational facility planning.

Conclusions

Based on the findings and observations, the following are the major conclusions drawn by the project team.

1. There is not now available and/or conveniently accessible information for facility specialists, architects, cost analysts, and other planners to use for preplanning, designing, estimating, and projecting vocational education facility needs
2. Reasonable standards/outlines are needed along with guidelines to assist in vocational education facility planning
3. The tools developed in this project could prove useful in coordinating and communicating vocational education facilities status and future needs to all state agencies involved in vocational program development and implementation
4. The modified Delphi technique is a good procedure to use to help generate vocational facility standards and guidelines for the future
5. If a uniform system of subject indentification with program area is used, it simplifies application of the facility assessment packet
6. Application of the assessment packet and Cost Estimation Model requires some special training of personnel who will use these assessment tools
7. The assessment packet and Cost Estimation Model are useful tools in management information system (MIS) for generating pertinent facility and cost estimation data and will be applicable in other states
8. The assessment packet is a useful instrument to use in planning as well as assessing facilities
9. Information generated from the assessment packet and Cost Estimation Model will be helpful to vocational planners at all levels (local, state, regional, federal)
10. The Indiana effort to compile and communicate building and site regulations for school facilities from various state agencies (e.g., Administrative Building Council, Department of the Fire Marshall, State Board of Health) would be helpful for all education facility planning.

Recommendations

The members of the project team fully recognize that the use of the information and products produced by this project rests with the Indiana State Advisory Council on Vocational Education. These five recommendations are being posted for their discussion and consideration:

1. It is recommended that the Indiana Advisory Council on Vocational Education work with other agencies in operationalizing and implementing the use of the **Vocational Education Facility Assessment Packet** and Cost Estimation Model for assessing the needs of vocational education facilities in Indiana
2. It is recommended that a series of activities be undertaken to communicate the nature, availability, and potential use of the **Vocational Education Facility Assessment Packet**, Cost Estimation Model, and Computer Programs
3. It is recommended that workshops be set up to train personnel (e.g., vocational directors, facility planners, architects, programmers) in how to use the products of the project
4. It is recommended that cooperative state efforts be undertaken to complete a total assessment of all facilities used for vocational education programs in Indiana
5. It is recommended that Indiana disseminate the products of this project for potential use nationally.